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Journal of the Society of Arts.

FRIDAY, AUGUST 31, 1855.

MEMBERS' PARIS VISIT.

The South-Western Railway have granted to those **members** holding through tickets to Paris the privilege of starting from any station on their line without extra charge.

The Secretary is also enabled to announce that the South-Eastern Railway Company, at his request, have granted to the members holding through tickets to Paris, the privilege of joining or leaving the train without extra payment at any of the following stations:—

Reigate Junction
Dorking
Guildford
Reading
Tunbridge
Tunbridge Wells
Hastings
Maidstone
Staplehurst
Ashford
Rye
Canterbury
Deal
Ramsgate
Margate

The Tidal Trains only call at Tunbridge—they are due there one hour after leaving London.

A Correspondent in Paris has been requested to send over the following information, for being posted up in the Hall of the Society of Arts for the convenience of Members; a copy will also be found at the temporary offices in Paris, 14, Rue du Cirque.

Addresses of moderate-priced hotels and *maisons meublées* in the quarters round the *Exposition Universelle* and the Tuileries, with the prices at which they could give accommodation in the first half of September, and a statement of the *number of rooms* at each of the prices named, which might be secured by parties writing three or four days beforehand, also price of meals.

SPECIAL COLLECTIONS OF ARTICLES OF DOMESTIC AND SANITARY ECONOMY FOR THE USE OF THE WORKING CLASSES.

Report addressed to the Council of the Society of Arts, by T. Twining, Jun., V.P., August 27th, 1855.

Gentlemen,—I beg leave to submit to you the following report, in compliance with the resolution adopted at the meeting of the 28th of March last, and which was to the following effect:—

"Resolved,—That the Council approves the proposal to form Permanent Economic Museums, as developed in Mr. Twining's Memorandum, and requests him, as a first step, to ascertain, with such facilities and assistance as the Council can give, what amount of co-operation may be depended upon in this and other countries, and to report thereon."

As concerns English co-operation, before leaving for the Continent, towards the end of April, I arranged for the issue of about 7000 copies of the Memorandum, to such societies and persons in the United Kingdom and the British Colonies as were considered most likely to take an interest in the undertaking.

The amount of communications elicited by this means has been small; but from the interest expressed in the plan by almost all those to whom a more direct application for their opinions has been made, there is little reason to doubt that it will be well supported when the opening of our winter session, and the return of the English Jury from Paris, shall have brought us to a favourable juncture for active operations.

Abroad, matters have progressed most satisfactorily. My first step was to obtain assurance that the subject of Economic Museums should be admitted as one of those to be discussed at the International Conferences convened for the month of July by the *Société d'Economie Charitable* of Paris.* This was effected without difficulty through the courtesy of M. le Vicomte de Melun, President of that Society, who has manifested a lively sympathy in favour of the movement, and has contributed much to its present success in France.

My next step was to prepare and have printed an abridged translation of my Memorandum, for circulation in France, Belgium, and the French part of Switzerland, and similarly a German translation for Germany and German Switzerland. It may not be amiss to remark, that, independently of the very cheap rate of postage for pamphlets which prevails in many parts of the Continent, considerable facilities exist in Germany for either collecting or diffusing information on matters connected with industry, owing to the existence throughout that vast country of a surprising number of Industrial Societies, mostly called *Gewerbe Vereine* (Trades Societies), several of which have attained to considerable importance. In Switzerland analogous facilities are afforded by a system of Cantonal Societies, comprising almost every department of public improvement, under the title of *Gemeinnutzgie Gesellschaften*, or *Sociétés d'Utilité Publique*. They are connected together by a central society, representing the whole confederation, and which shifts its annual meetings from one chief town to another, after the manner of our British Association.

At Zurich an important industrial establishment is being organised, somewhat resembling in purpose the Industrial College for Artizans, of which it will be remembered I proposed the formation in this country towards the close of 1851. I mention this because we are apt to doze, under the impression that other nations are slumbering.

Whilst at Berne, I communicated to Councillor Franscini, Member of the Federal Directory, and Minister of the Interior, the acknowledgments of the Society of Arts for the valuable assistance afforded by his Excellency in obtaining, last year, a collection of Swiss educational materials and results for our Educational Exhibition. He was pleased to express the most cordial willingness to facilitate our communications with societies and eminent men in Switzerland on every subject connected with the furtherance of arts, manufactures, and commerce, or tending to the improvement of the condition of the classes on whose labour they depend.

I have lately been informed, by some very intelligent gentlemen from Geneva and Lausanne, that they hope to establish in those towns small collections of articles for the use of the working classes, carefully adapted to the local wants. Such is the spirit of enterprise and emulation prevailing among the leading cantons, that an example of that kind would be rapidly followed by other chief towns in succession. The system of local museums thus established, would have a much greater amount of beneficial influence on the condition of the people throughout Switzerland, than could be effected by a single establishment on a large scale at Berne; but of course it will be very desirable to have at that city a central depôt and a committee for general management and correspondence.

In Belgium the success of the economic movement may be considered as secured under the direction of M. Ed. Ducpetiaux, the eminent friend and benefactor of the labouring classes in that kingdom. It appears that he had previously entertained views, and even begun operations conformable to the plan detailed in my Memorandum, and that it was chiefly with a view to join in our endeavours that he attended the Paris conferences, where he took a leading part, and became one of my best friends and supporters.

These conferences, convened under the title of *Réunion Internationale de Charité*, and which continued for eight days, were opened on the 17th of July, in the building of the *Société d'Encouragement*, kindly lent for the purpose.

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* It may be well to remark that the words *charite* and *charitable* are used in France in an extended sense, comprising every effort of practical philanthropy founded on religious motives.

M. le Vicomte de Melun, the distinguished President of the *Société d'Economie Charitable*, occupied the chair, and was ably supported by M. A. Cochin, mayor of the 10th arrondissement, and worthy representative of a family long conspicuous for talent, patriotism, and benevolence.

The plan adopted, and which proved most satisfactory, was to divide the investigation of benevolent institutions of every kind and country between five sections or bureaus, which met every morning, went thoroughly into the specialities allotted to them, and drew up reports. These were read and discussed at the general meetings held in the afternoon, and resolutions adopted briefly expressing the sense of the assembly. Of these, the following deserve notice as bearing on the subject of this report:—

1. A resolution recommending the formation, in the various countries, of collections of articles of domestic and sanitary economy, according to the views developed in my memorandum, and adopted by the Society of Arts.
2. A resolution for organising a system of international correspondence on all subjects connected with the welfare the labouring classes.
3. A resolution appointing a committee for selecting in the *Exposition Universelle*, with the concurrence of the Imperial Commission, such articles as might be most worthy of being offered to the attention of the working classes in a small special exhibition.

The labours of this Committee have been attended with the most satisfactory success. This must be mainly attributed to the intelligent and persevering zeal of its honourable members, who have evidently taken delight in a work which, from its character of practical, disinterested, and unobtrusive benevolence, came at once home to their sympathies and their habits. But much is also to be ascribed to the patronage which their Imperial Majesties have not ceased to bestow on the idea of a Working Classes Exhibition, and to the decided favour with which it has been taken up by H.I.H. Prince Napoleon; and many thanks are due to the eminent man to whom the fortunes of the *Exposition Universelle* have latterly been entrusted, and whose vast resources of mind and indefatigable activity have raised it from a comparative failure to a superlative success. M. Le Play, in the midst of almost overwhelming occupations, has not forgotten his former studies nor his former friends, and takes pleasure in furthering the domestic improvement of those classes whose condition he has so thoroughly investigated for twenty years, and so thoroughly elucidated in his great work, "*Les Ouvriers Européens*," just issued from the Imperial printing-house.

It was at first intended to exhibit the articles selected by the Special Commission, in a model building erected by our enterprising countryman, Mr. G. Clark, on the premises of the Palais de l'Industrie, adjoining his interesting *Cantine Modèle.* I have since been told that it has been found more convenient to allot for this purpose a separate space of 500 square metres.

My last advices state that everything is going on satisfactorily, and that the collection will probably be inaugurated at the time of the Society of Arts' visit.

NOTICE.

The following is the notice which has been posted up in the English part of the *Exposition Universelle.* Similar ones have been published in French and German.

A special Commission, duly authorised by the Commissioner-General, has undertaken to select throughout the whole Exhibition such articles as their cheapness, combined with good quality, may render particularly useful in a simple home.

A certain number of these articles are to be exhibited in a separate section.

The preparatory measures are already nearly completed. Exhibitors who may be desirous of submitting any articles to the above-mentioned Commission, are requested to apply immediately to M. Savoye, commissioner for classification; to M. Audley (Bureau des Réclamations); or to M. de Pelanne, sub-inspector. These gentlemen will supply any information relative to the days on which the Commission holds its sittings.

All representatives and Commissioners of foreign countries are particularly requested to circulate the present notice among their countrymen, and to engage them to contribute to the realisation of so useful a scheme.

The special Commission, in order to facilitate the selection and classification of the different objects, has adopted the following divisions:—

I. Lodging.
II. Fittings and furniture.
III. Food. Stores for washing, lighting, and warming.
IV. Clothing.

I.—LODGING.

Building.—Plans and systems of model-lodgings; building materials.

II.—FITTINGS AND FURNITURE.

Every article included in the present division is classified according to the usual arrangements of a family dwelling, consisting of three rooms,—a kitchen, a bed-room, and a sitting or working room.

It is highly desirable that the furniture and utensils should be made up in such a way as to answer their purpose in the smallest possible compass.

A.—THE KITCHEN AND ITS APPENDAGES.

Preservation of Eatables.—Liquids: Cellar, casks, jugs, bottles, filters, funnels, plugs and cocks, measures, bottle brushes. Provisions: Safes and pantries, boxes, baskets. Fuel: Coal cellars, charcoal boxes and shovels.

Heating and Ventilation.—Fittings: Fire-places and hearths, stoves, ventilators. Furniture: Utensils for the fire-place and stoves, fire-dogs, tongs and shovels.

Lighting.—Fittings: Conduits and gas apparatus. Furniture: Lamps, candlesticks of all descriptions, lanthorns, snuffers.

Preparation and Cooking of Alimentary Substances.—Fittings: Stoves, cupboards, dressers. Furniture: Dressers and kitchen-tables, boiling-pots and saucepans, cauldrons, boilers, kettles, coffee-pots, dutch-ovens, gridirons, frying-pans, skimmers, sieves, cullenders, ladles and dippers, roasters, coffee-mills, carving-knives, hand-mortars, spice boxes, scales, measures.

Table Service.—Fittings: Cupboards. Furniture: Sideboards and buffets, dining tables; soup-tureens, dishes, plates, tea-things, oil-cruets, salt-cellars, decanters, glasses, knives, forks, and spoons.

Scullery and Washing.—Fittings: Sink-stone and its accessories. Furniture: Tubs and pails, mats, water-pots, brooms, sponges, scrubbing brushes, &c. Utensils and apparatus for washing; apparatus for drying and ironing.

B.—THE BEDROOM.

Furniture.—Fittings: chimney-pieces, cupboards, blinds and shutters. Furniture: closets, drawers, hat and cloak pins.

Bedding.—For adults: wood and iron bedsteads, night tables and their accessories. For children: cradles, bedsteads, hammocks, mats, and carpets.

Articles for dressing and cleanliness.—Washing-stands, basins, and jugs, razors, scissors, looking-glasses. Combs and brushes, sponges, soap, pomatum, essences for taking out spots, clothes brushes.

Furniture in case of illness.—Easy arm-chairs, warming pans, foot warmers, night lamps, syringes, urinals, &c.

C.—SITTING OR WORKING ROOM.

Furniture. — Fittings: chimney-pieces, cupboards, shutters and blinds. Furniture: chairs, sofa-beds, cabinets, writing tables or desks, with their accessories, such as inkstands, pens, &c.

Useful and ornamental articles of furniture.—Alarm-clocks, time-pieces, lenses, looking-glasses, chimney-ornaments, barometers, thermometers ,umbrellas.

Library and sundry appendages.—Book-cases and hanging shelves, prayer-books, almanacks, pocket, memorandum, and account-books, maps, engravings, and cheap articles of sculpture.*

The husband's tool-box.—Hammers, scissors, knives, pincers, nippers, turnscrews, corkscrews, gimlets, awls and bodkins, files, graters, hatchets, saws, rules, rulers, squares, compass-boxes, paint brushes and colours, glue, lenses, nails, &c.

The wife's work-box and cabinet.—Scissors, pin-cushions, bodkins, ribband-measures, needles, pins, buttons, thread, silk, tape, &c. Family medicine chest.

III.—Alimentary Substances, and Stores for Washing, Lighting, and Warming.

Drinks.—Wine, beer, cider, perry. Home-made drinks. Brandy and family liqueurs.

Corn, farinaceous and glutinous substances.—Unprepared. Prepared.

Vegetables and fruits.—Unprepared. Prepared.

Meat.—Unprepared. Prepared.

Fish.—Unprepared. Prepared.

Oils, butter, &c.—Unprepared. Prepared.

Condiments.—Unprepared. Prepared.

Household Stores.—For washing and scouring. For lighting. For warming.

IV.—Clothing.

Linen.—Body linen: in pieces; ready-made. Bed linen: in pieces; ready-made. Table linen: in pieces; ready-made. Dusters, rubbers, &c.: in pieces; ready-made.

Clothing.—For men: in pieces and made-up. For women: ditto.

Shoes.—For men. For women.

Head-dress.—For men. For women.

Clothes of all descriptions for children.

THE WOOLS OF COMMERCE, AND THE INFORMATION TO BE OBTAINED THEREON.

By P. L. Simmonds.

Departing somewhat from the plan I had laid down for myself in arranging a few remarks and observations on Animal Products, some of which I deemed might possibly be found useful and suggestive to members at home and abroad, I shall endeavour in future to follow Professor Solly's simple subdivision, according to his Trade Museum arrangement, although it is inconvenient in some points, if strictly followed, for it does not enable me to describe, or to allude to, the various commercial products furnished by any particular animal—for it groups similar products of several together. Without, therefore, strictly adhering to his classification in the synopsis he has issued, I shall commence with the "wool series"—the second of our great staples—one of the most important raw materials of our commerce, since our imports of wool average some 360,000 bales yearly (in 1854, 106,000,000 pounds). Our home clip of wool is further about 200,000,000 lbs., and the value of the woollen manufactures exported (exclusive of home consumption) nearly £10,000,000 sterling.

Without entering further into the statistics of the trade, which has already been fully gone into by Mr. Henry Forbes, before our Society, by Mr. Thomas Southey and others,—without touching upon the immense extension of sheep and increased production of wool in the Cape Colony, Australia, and South America,—without going into the details of the Alpaca, the Angora goat, and ordinary goats' wool,—I shall content myself with entering somewhat fully into the practical detail of the qualities of wool, the points to be studied, and the information to be gleaned from an examination of the results of experience and judgment in the chief wool-growing countries. Of course, any such remarks must necessarily be discursive and general, both from the large field to be traversed and the channel through which they have to appear—the objects aimed at by the Society of Arts being rather the promotion of mechanical and practical improvement than agricultural and pastoral occupations.

The sheep, perhaps, of all domestic animals, except the dog, is most easily modified in its form, size, quality of fleece, and other properties, to suit it to various situations and purposes for which it is intended by man. We have, accordingly, at one end of the scale, the long coarse wool of the Leicester, Cotteswold, and other long-wooled breeds, furnishing what is called by manufacturers "combing wool," and employed in making blankets, rugs, and coarse worsted goods, chiefly in Yorkshire and in Scotland. At the other end of the scale we have the short fine wool of the Merino sheep, fitted for spinning into the finest threads, of which the most beautiful superfine cloth is manufactured in the West of England.

Upon examining these two classes of wools with the microscope, a further and very curious difference is observed, viz., that whereas the fibres of the combing wools are mostly round and smooth, those of the clothing wools are jagged or barbed at the sides. There are intermediate qualities adapted either for combing or clothing, but this last-mentioned property is essential in a wool intended for the manufacture of cloth, the threads of which require to be "felted" together in the fulling mill, by which a closer texture is produced than could ever result from separate threads, however closely they may be woven together.

Corresponding to the varieties of fleece possessed by different breeds of sheep, there are varieties in the form and size of the carcase, and in the disposition of the animal. Whilst some breeds are adapted to rich and succulent lowland pastures, and are of a quiet and lazy disposition, inclined to fatten at an early age, but of tender constitution, others are suited to pick up a living by travelling over a wider range, and to endure the rigours of exposed hills and mountains.

Now, it will be evident that, in introducing a breed of sheep into a new country, it is of the utmost importance to select that one which experience has proved to be best adapted, by its constitution and habits, to the soil and climate in which it is desired that it should thrive. It would be as reasonable, for instance, to take a fat Leicester sheep from his sheltered and succulent pastures, and expose him on the bare short herbage to the sweeping blasts and snow storms of the Cheviot or the Lammermuir hills, as it would be to transport a city alderman to the backwoods, and bid him get his own living with the rifle of the American Indian.

The progress made in sheep farming in various countries—the comparative increase in the weight and profits on wool—the modes of tending, shearing, washing the fleece, baling. taking to market, relative yield of wool, modes of boiling down the carcase and steaming for tallow, all these points are deserving of notice and attention, and reliable information upon them would be of great interest to many.

The Americans, who are always ingenious in overcoming difficulties, have recently been adopting India-rubber cotton floaters for enveloping and packing bales of cotton, a number of which, thus united and inclosed, are floated down shallow rivers, when the stream is too low to be navigated by boats or steamers. One of these gum elastic wrappers costs about £2 10s.; two or three bales of cotton on a raft only draw about a foot. Might not this plan be worthy of trial on the Murrumbidgee, the Lachlan, the Darling, and other tributaries of the Murray river in Australia, where the wool could be thus forwarded from the distant inland sheep stations to the shipping port with great economy; and the point is also worth the attention of the Dutch Boers on the Orange river in Africa, and, perhaps, of some of the settlers on the tributaries of the River Plate, and the interior rivers of South America.

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* The Commission do not feel empowered to draw up a catalogue of works calculated to form a family library. It is, therefore, deemed sufficient to point out such books as, by their character and daily use, become, as it were, a part of the furniture. The same reserve has been observed in regard to engravings and small articles of sculpture.

Our Society has already directed great attention to the production and improvement of wool, and to an investigation of the progress of wool manufactures. Indeed, it is a source of satisfaction to know that the various subjects discussed, and the information elicited through its old Transactions, its premium lists, its lectures, discussion meetings, and *Journal*, have resulted in great benefit to the arts and commerce, and originated many important productive and manufacturing improvements.

It is both instructive and gratifying to find the high price of wool, occasioned by the increased demand for manufactures in France, Germany, and America, forcing a part of mankind back as it were to the most primitive pursuits, and the successful prosecution of trade stimulatiing on the cultivation of the land in new and distant countries. The produce of our flocks at home, for want of correct agricultural statistics, can only roughly be computed by estimate, but the imports from abroad are clearly ascertainable from the trade returns. The annual demand for wool is fast becoming greater than the annual supply, and to our own agriculturists we must look, as well as to our own colonies and foreigners, for an increase.

As in tillage land the same acre of ground may be made to produce from 30 to 50 per cent. more than its usual yield, by the aid of fertilisers, so may a flock of sheep be made to shear from 30 to 50 per cent. more of wool by adapting their food to the especial formation and growth of wool. One of the constituent parts of wool is albumen, hence, those cereals which contain the largest per centage of albumen make the most wool when fed to sheep. Wheat and rye contain large proportions, peas and beans 29 per cent., oats only 10½ per cent.

It has been ascertained by actual experiment that the following are the results of feeding different kinds of roots and grains for the production of wool.

1000 lbs. of	Potatoes, raw, with salt,	make	6½	lbs. of wool.
Ditto	Mangel Wurtzel, raw	,,	5¼	,,
Ditto	Wheat	,,	14	,,
Ditto	Oats	,,	10	,,
Ditto	Rye, with salt,	,,	14	,,
Ditto	Rye, without salt,	,,	12½	,,
Ditto	Barley	,,	12½	,,
Ditto	Peas	,,	16½	,,
Ditto	Buckwheat	,,	10	,,

These results show that peas, wheat, and rye, produce the greatest increase of wool, and give about twice the number of pounds of wool that roots do in equal weight. Indian corn meal, oil cake, and such gross substances, are the proper feed when fat mutton and tallow are the objects; but the careful flock-master, whose main object is the wool, must rely on good hay and water, and a daily moderate allowance of those grains, with some potatoes or carrots as green food, for the attainment of his object, viz., the greatest amount of good wool, and that in the very best condition.

The points to be treated, as respects the quality of wools, were thus defined by the Jurors of the Great Exhibition:—"The fineness and elasticity of the fibre; the degrees of imbrication of the scaled surface of the fibre as shown by the microscope; the quantity of fibre developed in a given space of the fleece; the comparative freedom of the fleece from extraneous matters; and the skill and care employed in preparatory processes, such, for example as that termed 'scouring' the fleece, upon which depends its liability, or otherwise, to mat at the bottom of the staple."

The qualities most valuable in regard to the fleece are thus pointed out by a colonial correspondent of great experience and judgment:—1. Fineness. 2. Fullness. 3. Freeness. 4. Soundness. 5. Length. 6. Softness.

1. Fineness of the fibre of the wool can be judged of by practice when a lock of it is laid on the cuff of a coat of a dark colour. A deficiency in this quality will show itself by an abrupt falling off in fineness either in the neck or breech of the animal, or in both. The difference in fineness between these parts and the rest of the fleece should be so gradual as to be almost imperceptible. The "settler" cannot exert himself too much to breed "close up," as it is called (*i.e.* to make the whole fleece as nearly as possible equal throughout), otherwise the character of his flock as "good breed" will never be established, and the wool will invariably prove bad in the manufacture. No hair must be anywhere visible on the animal, especially under the forelegs.

2. Fulness means the closeness with which the staples or locks of wool grow together on the skin. Upon opening the wool of a sheep possessing this quality in perfection, only a thin line of skin, as fine as a pencil-stroke, will appear round each staple, but if deficient, a space almost bare. This is a point in which the Australian sheep are generally deficient, and of course the weight of the fleece suffers most materially. Some of the German sheep have greal rolls or puckers of skin under their necks and on other parts, which give them a singular appearance, but the extent of wool-bearing surface is thereby increased.

3. Freeness means that the separate staples, or locks of wool, and also the separate fibres of each staple, are distinct, and by no means entangled together, or what is called "smushy," like cotton wool. A deficiency in this quality shows itself most plainly along the ridge of the back. In a well-bred sheep the wool, on being opened, should fall apart under the hands as clear and broken as the leaves of a book. A want of knowledge of this quality has caused infinite mischief in Australia from people having mistaken an absence of freeness for fullness or closeness of growth, which we have already explained.

4. Soundness, or strength of fibre, is a quality in which New Zealand wool, like its native flax, is said to be pre-eminent. Along the ridge of the back there is a sort of division between the wool of each side. Tenderness, *i.e.*, deficiency in soundness, invariably shows itself there. Take out a staple from this part, and give it a strong steady pull, holding one end in each hand. If this proves sound, depend upon it that the whole fleece is so too. This is an indispensable quality in a combing wool, such as New Zealand is fitted to produce, as the process of combing tries the soundness especially. It is one also in which the Australian wool is liable to be deficient, arising from a check to the growth of the wool from the sheep having been half-starved by drought, an affliction to which those countries are so often liable. For though the wool begins to grow again as soon as the sheep recovers his flesh, there is always a weak place in that year's clip at the point where the growth recommenced, by which it is materially damaged for combing purposes at least.

5. Length of fibre must be carefully regulated by the nature of the pasture and climate; for any, the least, excess will cause a proportionate deficiency in soundness, by which the wool will be depreciated for clothing, and rendered utterly useless for combing. If the length of the wool be too great for the nature of the country, it will be known by the twisting of the wool into hard bands, like pieces of twine, which break almost like rotten thread. It is an error as mischievous as the short cottony wool, and cannot be too carefully avoided. To judge of the length of the staple in a fleece, the best part to examine is the division along the ridge of the back, as it is there usually somewhat shorter than in other parts.

6. Softness sufficiently explains itself. A want of this quality is most conspicuous between the points of the shoulders and up the neck.

There is an oily matter natural to the wool of merino sheep, an excess or deficiency of which is equally objectionable, but there seems to be no definite term to express the different kinds of oil, yolk, or gum, as they are alternately called. Probably those sheep should be chosen whose fleeces abound in what may be termed transparent oil within the fleece, which, flowing to the end of the staple, there forms a yolk or gum, which by combining with dust, gives the surface of the wool a dark look. There can be no doubt that this yolk preserves the fleece from "dead ends," and the deleterious effects of stormy weather, that it greatly facilitates the growth of the wool, and much increases its strength, softness, and elasticity. Manufacturers, I believe, will be found to prefer a fleece well supplied with the yolk, after it has been thoroughly washed, to a dry fleece with "dead ends," as they acknowledge that the wool from oily sheep is manufactured with much less waste, is easier worked, and will make handsomer and more lasting cloth than the wool of sheep quite destitute of oil. But there is another kind of gummy matter, quite different in its appearance and effects from the above. This may be observed in yellow, thick, pitchy particles within the fleece, and does not circulate freely to the end of the wool, consequently the fleece has a light-coloured surface, with "dead ends," and as the wool cannot be freed from this thick adhesive gum, by a common cold-water wash, such fleeces will show a larger per centage of shrinkage in cleansing than any others.

The German fleeces are much fuller of yolk than the spout-washed Australian wool; on this account a considerable allowance of weight must be made when comparing the weight of the former with that of the best conditioned flocks of Australia.

The weight of the fleece obtained from various kinds (both the maximum and the average), is a matter highly desirable to be known.

We have a great number of breeds in Great Britain, from the Shetland, yielding only about 1½lbs. of fine cottony wool, and various short and long woolled sheep, ranging from 2 to 10lbs. the fleece, but there are other breeds scattered over the globe, of the peculiar characteristics of which we know little.

Among the sheep peculiar to Turkey and Asia, and hitherto unknown in Europe, is a breed called the Karamanlia, generally met with in the neighbourhood of Broussa, where large flocks of them are bred, and where they are in high estimation for their flesh and their wool, but more particularly for their tails, which, when boiled down, yield as much as 15lbs. of excellent fat. This fat keeps good much longer than butter, and replaces it in case of need.

The Bengalee sheep is small, lank, and thin, and the colour of three-fourths of each flock is black or dark grey. The quality of the fleece is worse, if possible, than its colour; it is harsh, thin, and hairy in a very remarkable degree. The breed on the Coromandel coast is of a still more inferior quality, both in fleece and carcase. Their coarse hair and their incompact form, suggest an affinity to the goat or deer. Two or three may in some places be bought for a rupee (2s.), and yet are an unprofitable purchase.

There are in Bengal a few sheep with four horns, which are superior in size, and better proportioned, than the common kind. The Cabool sheep readily fatten; they have a large excrescence on the rump, far exceeding that of the Cape sheep; it is of a semicircular form, and nearly half as large as the whole body. The fleece of the Indian sheep ordinarily weighs but half a pound. In Coimbatore there is a small compact breed of sheep called the Curumbar, modelled very much like the Southdown, but on a reduced scale, and with a head shaped like the Merino. The animal fattens readily, and its flesh is close-grained and well flavoured. The wool is thick and curly, and almost entirely free from hair. The fleece is generally white and the head black. The sheep are shorn twice a year.—(*Simmonds's Colonial Magazine*, vol. 6, p. 144.)

Measures have lately been taken to improve the quality of the Punjaub wool, in which there is now a brisk export trade, *via* Kurrachee, including 30,000 to 40,000 maunds, of about 75 lbs. It has increased about 90 per cent. over previous years. The wool-staplers of Khorasan, and the producers of wool on the hills north of Cabul, Ghuznee, and various parts of Central Asia, bring it down by caravans to the frontier, and as the navigation of the tributaries of the Indus becomes developed, a further increase of the produce brought down may be looked for.

It is impossible for a stranger to conceive the extreme care and attention paid to the production of fine wool in Germany, where immense flocks are reared for their wool alone, kept during the greater part of the year in large barns, and so carefully tended, that neither dew nor rain is allowed to fall upon them. In the King of Saxony's flock, wethers are kept to the age of nine or ten years, solely for the 2 lbs. of wool which they annually yield. If subjected to a varying temperature or checked perspiration, a knot is formed in the staple, which can be seen under a very strong magnifying power, and which very materially deteriorates from the value the Germans attach to the article. Next to equality, fineness of texture is the great desideratum, and a beautiful machine has been invented by Mr. Jeppe, of Rostock, for the admeasurement of the thickness of the wool, and the proof of its strength, which unites the accurate workmanship and delicacy of watchwork. By this instrument 100 hairs of each fleece, selected from nine different portions of the body, forming an average of fineness, are subjected to a given pressure, which is registered on a very minute index. The result of one experiment was, that an Austrian fleece had been produced, of which twelve hairs only equalled in thickness one Leicester!

In the Museum at Stutgard are said to be samples of every wool in the known world, comprising those even of our most recently-established colonies, carefully washed, weighed, and sorted, with such descriptive remarks appended as are necessary to illustrate the subject.

So important is the proper selection of breeding animals considered in Germany, that the best flockmasters there do not trust to their own judgment, or that of their shepherds, but employ persons called "sheep classifiers," who make it their special business to attend to this part of the management of several flocks, and thus to preserve, or, if possible, to improve, the best qualities of both parents in the lambs.

The ordinary flocks in Saxony produce very fine wool, but much less in quantity than those of the improved breed; the first yielding from 2 to 2¼ lbs., worth from 2s. 6d. to 3s. 6d. per lb., whilst the flocks of M. Gadegast, and a few others, yield from 2½ to 3¾ lbs., worth from 3s. 6d. to 4s. 4d. per lb. Thus whilst the yield of an ordinary sheep of the country would be worth on an average 6s. per annum, the yield of an improved sheep would be as much as 10s. a year. This large difference in the produce of each sheep in a flock of some thousands would of course amount to something well worth the extra care and expense.

There are flocks of the Negretti breed in Mecklenburgh and Pomerania of undoubted blood, which average 4 lbs. per fleece, worth 3s. 6d. per lb., and many rams are to be found yielding from 8 to 10 lbs. of washed wool. This weight is also often reached in the Cape Colony and in America.

The Merino race ought as much as possible to be kept pure in France; and the flesh of the French breed of sheep would be improved for food by a cross with the English breed.

M. de Lavergne, a recent French writer, from careful inquiries, estimates the number of sheep in France and the United Kingdom severally at 35 millions, but while the English sheep are supported upon 77 million acres, those of France live upon 132 millions. Scotland, in spite of all her endeavours, can maintain only about 5 million sheep, and Ireland, which from its pasture ought to rival England, reckons at most only two millions, upon 200,000,000 acres.

Estimating the value of our flocks, we shall find:—

35,000,000 sheep at, say 25s. average, worth	£43,750,000
The fleece, at a low average of 4lbs., say at 10d. the pound	5,833,333
	£49,583,333

The average return of an English sheep farm is fully six times greater than a French one.

In Canada, the number of sheep, in round numbers, is 1,600,000, and the average weight of the fleece 2 lb. 10 oz. The increase of wool there in nine years has been 64 per cent., and that of sheep 33 per cent., showing an improvement in the weight of the fleece of not far from 30 per cent. The proportion to population in the United States and Canada is about the same, 9 sheep to every 10 inhabitants.

About one-fourth of the French sheep of the present day consist of merinos and half-merinos, the rest have at the same time improved both in carcase and wool, simply by means of more skill in their management.

England has proportionately three times more sheep than France. To this numerical difference has to be added a no less important difference in quality. And the reason for this is, that in France wool has been looked upon as the principal product, and meat the accessory; in England, on the contrary, the wool has been looked upon as the accessory, and meat as the chief production. About 10,000,000 head of sheep are slaughtered annually in the British isles, of which 8,000,000 belong to England alone, yielding, at the average weight of 80 lbs. of neat meat, 800,000,000 lbs. In France there are about 8,000,000 slaughtered, which, at the average weight of 40 lbs. neat meat, equal to one-half the weight of the English sheep, gives 320,000,000 lbs. So that while the 35,000,000 of French sheep are equal in wool to the same number of sheep in England, they are deficient in meat in the proportion of one-half.

The Americans, although importing wool largely for their manufactures, are, nevertheless, paying great attention to the increased weight of the fleece on their sheep. While the number of sheep between the two last decennial censuses increased but 20 per cent., the aggregate weight of the fleece was augmented 46 per cent.

In 1840 there were 19,311,374 sheep, yielding 35,802,114lbs, of wool, equal to but 1$\frac{84}{100}$ lbs. per head. In 1850, the average weight of each fleece was 2$\frac{43}{100}$ lbs.; from which it would appear that such an improvement had taken place in the various breeds of the American sheep as to increase their average product about 32 per cent. throughout the United States. And a critical examination of the returns of sheep and wool proves not only that the breeds are capable of much improvement, but that improvements are steadily taking place. The Americans, indeed, assert that they can outrival the world in wool as in cotton. For while Spanish sheep, yielding naturally wool 2,000 to the inch, carried to England, degenerated to 900 to the inch, when brought to the United States, they recovered to 2,100, a finer class of wool than the original.

The woollen fabrics used in the United States contain, according to the Secretary of State's last report, 300,000,000lbs. of wool, of which in 1853, 60,000,000lbs. were raised in the country, 21,000,000lbs. imported in the raw state, and 119,000,000lbs. imported in manufactured fabrics. In the year ending 1853, 3,669 sheep and 216,472lbs. of wool were exported from the States. The high price of wool and mutton has given an increased impetus to sheep husbandry in America. Texas is destined to be a great sheep as well as stock-raising State. The average price of wool in America for ten years previous to 1853 was 28 cents (14d.) per lb.; in 1853 it rose in Pennsylvania to 40 cents., and in Ohio to 50 cents.

In Norfolk, the average price of half-bred Down and Leicester hogget-wool for 32 years ending with 1853, was 39s. 3½d. per tod of 28lbs. The highest point reached was 60s., in 1834; the lowest, 24s., in 1848.

5, Barge-yard, City, August 29th, 1855.

FIRE-PROOF SAFES.

Recently, Mr. George Price, of Wolverhampton, delivered a lecture in the Hall of the Architectural Institute of Scotland, at Edinburgh, "On the best means of preserving the precious metals, deeds, commercial books, and other valuables, safe both from thieves and fire." Mr. D. Rhind occupied the chair. The lecturer commenced with a short reference to the importance of the subject, and then proceeded to state that iron safes, chests, and boxes, were quite of modern date, especially fire-proof ones, which were not introduced prior to the present century. Our forefathers, he said, in the simplicity of their arrangements and requirements, were satisfied by placing their valuables in an oak chest, secured by one or more locks in front, or in a brick or stone closet, with either a wooden door studded with nails or a plain iron one, and in both cases secured by a common warded lock, or a lock without any wards, or the usual iron bands, with hasps and staples and padlocks. The most interesting specimen of the former which had come under his notice was the celebrated oak chest in which the Crown jewels of Scotland were deposited in the year 1707, the lid of which was secured by three locks, and in the year 1818 forced open in presence of the Royal Commissioners, because, as the account stated, "no keys could anywhere be found." Surely there were no Hobbses or Goaters at even this late period, for he had no doubt that a bent skewer would have opened the three locks without effort, and thus saved this ancient relic from such unhallowed violence. Many of these oaken chests were still in existence, and in a state of perfect preservation. The first examples of the manufacture of iron safes or chests were the foreign coffers, two only of which he (the lecturer) had had an opportunity of seeing. They were manifestly an improvement upon the oak chest, both as regarded the material of which they were made, and the locks by which they were secured. Cast-iron chests had been made for many years in Wolverhampton and other places, but wrought-iron ones, he believed, were first made in London, where alone the trade existed till within the last twenty years, at which time several locksmiths in the vicinity of Wolverhampton commenced making them. The manufacture of fire-proof iron safes, although such an important desideratum, did not appear to have been thought of till the year 1834, when, from the following list of patents connected with the trade, it would seem that Mr. Marr, of London, was the first to introduce the improvement:—Wm. Marr, London, February 13, 1834; Chas. Chubb, London, May 13, 1838; Thos. Milner, Liverpool, February 26, 1840; Edward Tann, sen., Edward Tann, jun., and John Tann, London, November 25, 1843; William Milner, Liverpool, March 3, 1850, and February 20, 1850; and George Price, Wolverhampton, January 31, 1855. The lecturer described shortly the nature of the improvements for which each of the patents was taken out, stating that the application of the principle upon which most, if not all the makers of the present day, constructed their fire-proof chests and safes, was first patented by Mr. Milner, in 1840, and was thus described in the specification—"For constructing boxes, safes, or other depositories of an outer case of iron or other material, enclosing one, two, or more inner cases, with spaces between them containing an absorbant material or composition, such as porous wood, dust of wood, &c., in which are distributed vessels, pipes, or tubes, filled with an alkaline solution or any other liquid evolving steam or moisture, which tubes, on the application of heat or fire, would burst into the surrounding absorbant matter, which, thus pervaded with moisture and rendered difficult of destruction, would protect the inner cases or boxes and their contents." The seventh and last patent, dated January of the present year, was by the lecturer himself, and its objects were, first, to paint the inside of the body, and all the internal parts thereof, with a composition to prevent the oxidation or eating away of the iron by the action of the salt or moisture contained in the inner chambers; secondly, to case-harden all the exterior of safes, chests, and boxes, in order to make them drill-proof; to construct the locks in such a manner as that gunpowder might not be inserted therein for the purpose of blowing them up, &c. After a lengthened description of iron safes in general, and the style of their construction, Mr. Price proceeded to enumerate the qualities requisite in iron safes in order to render them secure against fire and thieves. In the first place, he said, the iron should be of such a thickness as to prevent its being broken open by violence, or injured by a fall from an upper story or other casualty during a fire. Secondly, the door should be so neatly fitted that no instrument could be inserted between its edge and the outside of the safe for the purpose of forcing it open, and the iron should be so prepared as to resist the attack of drills when employed to make an opening for the purpose of either taking out the small lock, or of conveying gunpowder into it. Thirdly, the large lock should be so made that were holes drilled through the door, no space would be left inside the case to contain sufficient gunpowder to explode it. Fourthly, the case containing the lock should fit the interior of the safe as tightly as the opening and closing of the door will allow, to exclude the external heat in case of fire, and to prevent the escape of the moisture generated by the fire-proof composition, designed to preserve the contents. Fifthly, the inside case, forming the chambers for the fire-resisting materials, should fit the inside of the body quite tight, to prevent the undue escape of the vapour when in a fire, and should be so secured to the outer frame that no violence exerted on the door would force the removal of the lining or casing. Sixthly, the non-conducting and steam-generating composition placed in the chambers or inside casings, and at the back of the lock-case, should be prevented from having any injurious effect upon the iron, so that, when subjected to the action of the fire, whilst preserving the contents from combustion or damage of that kind, it should not injure plate or specie, or affect the writing upon, or substance of, deeds and books. Seventhly, the small lock which secures the bolt should be easy to use, not liable to disarrangement, likely to wear well, powder-proof, and incapable of being picked. All these qualifications were to be found, the lecturer contended, in the safes which he constructed and had patented. In drawing towards a conclusion, Mr. Price wished it to be understood that the thickness and number of the chambers, and the quantity of the chemical fire-resisting composition, must always be in proportion to the probable intensity and duration of a fire, as no safe could be made to withstand an unlimited amount of fire and for an unlimited period. It was altogether a question of time, and for this reason, where the risk was very great, the safe should be built in the wall or otherwsse surrounded with masonry. Many of the remarks he had made in reference to iron safes, chests, and boxes, equally applied to closets and strong rooms with iron doors, but as the latter repositories were not moveable, being built of masonry, their security against fire might be increased by the use of the chemical fire-resisting material in the wall forming such closet or strong room. Frequent questions had been put to him as to whether his fire-proof safes were safe repositories for gunpowder; to which he had no hesitation in replying that they were, for the moment the outer plates became red-hot the steam generated would be absorbed by the gunpowder; which would then become a wet paste, not liable to explode till dried again.

Home Correspondence.

HEATH v. UNWIN.—PATENT LAW.

Sir,—This great drama is acted out—the curtain has fallen on the last scene of the performance. The crooked twig of litigation which has passed through every court of law and equity, bent by the judicial hand, first to the right and then to the left, has received the final manipulation of the highest court of appeal, and now, perfectly rectified, we are bound to assume the decision has been shot forth, "straight as the arrow from the Tartar's bow." To doubt the correctness of a supreme tribunal, would be to speak evil of dignities, and this we must not do. When the door of hope is closed, the "lasciate ogni speranza," written on the lintel, no wise man will proceed to cavil, the only consolation remaining, being the belief that what is irrevocable, is "wisest, virtuousest, discreetest, best." But it is from those who have made great shipwreck that we can best learn how to avoid similar disaster, and as no subject can be of much more importance in a journal devoted to the encouragement of useful arts and inventions, than a discovery how to escape "the heavy blows and great discouragement" dealt by legal tribunals in opposition to your onward course, when they take from inventors those properties you are inciting them to create, I beg, as a warning to those who shall come after, to offer a few remarks, not on the decision itself, for that is made useless, but on the principle illustrated by its extraordinary previous career. A paradox of extreme importance to the rights of inventors will appear on the face of it, which I would fain hope some legislator of truly comprehensive mind, acting on calm deliberation and not on preconception or acerbitous impulse, may devise means to reconcile.

In this case, of which I gave a narrative in your 135th number, a very simple matter had been so complicated by repeated determinations, re-determinations, and in-determinations, that the judges were finally called in to aid the deliberations of the House of Peers. Several of the judges had already been counsel in a cause which has endured through two generations of the Bench, and eleven only gave their opinion. Seven were in favour of the patentee, and four against him; of these four, three were of that court which had already distinguished itself, and created the litigation, by interposing legal subtleties before the verdicts of twelve men of common sense and buisness. The Lord Chancellor, when Baron Rolfe, was also of that court, and joined in the judgment which 11 years since reversed Heath's verdict, so that, when in appeal, he was only confirming himself. The only peer besides, who took a part in the final decision, was Lord Brougham, from whom, as a nobleman of some scientific pretensions, I did hope a different view of the case. But probably he sketched a like bold outline to that sweeping decision in Taylor v. Attwood, a case of equally memorable duration, that the contest was of "folly against fraud," and gave fraud the benefit of the appeal. This severe view of the penalties which ought to attach to want of due caution, may consist with the strictest elevation of justice, and in that case I admit that Heath did not act wisely in trusting Unwin, but that he ought, if possible, to have devised some means of shaping a new patent, if it could have been done without invalidating the first, in order to protect his improvements from the attacks of fraud, and if the folly of not doing so must be properly visited by a forfeiture of all, the late judgment might be comprehensively epitomised in three homely words, but, as patent property in a civilised country is of vast and increasing value, not to the inventor only, but to the great public, as imparting the stimulus of prospective remuneration, to induce thoughtful and ingenious minds to dedicate their time to realising great social desiderata, a precious jewel may be extracted from this toad's head, ugly and venomous as it is, if it leads to or indicates any amendment in the law and practice of protecting such property. Now it appears to me the root of the whole evil is this:—Successful invention is generally the fruit of minds possessing a considerable share of native candour and simplicity. Their study is *nature* and *truth* in unsophistication. Nature will not reveal her best secrets to a wrangling, captious, hair-splitting, shallow, or dishonest character. An inventor is seeking after what is right, and nothing else; careful, scrupulous thought, patience and sincere investigation, so much absorb the inventive mind, that a straight edge is as capable of enacting a snake, as a plain, honest inventor is capable of even conceiving the nature of the sinuous quiddities into which men who live by words are able to distort the plainest common sense signification. In brief, therefore, the monstrous demand is made by our patent law upon a frank character of this sort, that he shall be not merely a "sharp man," but a first-rate lawyer. The greatest of our inventors was not even a "sharp man;" on the contrary, we read in Watt's letters habitual confessions that he was unable to deal, successfully to himself, with even ordinary men of business. Far exceeding this qualification, our law requires of an inventor that he shall be, or have intimate confidential access to, a first-rate lawyer; and even with this advantage, he must be no simple man to make out a sufficient consulting case of his own prospective ideas. We might as well insist on a child cultivating a moustache under penalty of losing his birthright, as expect a plain inventor, loaded with a burden of truth, to frame, or find means to frame, a specification contemplating all its contingencies, with such acuteness that it shall endure the equivocal attack of men practised in nothing else but such attacks. It is a flock of sheep before a charge of cavalry, soon slain or shorn. Surely it is too much to require of men of every class of society, before they fall inventing, that they shall add the most laborious and learned of professions to their own calling. It is true our patent laws are prefaced by a direction, that wherever there is doubt, that doubt shall be interpreted in favour of the patentee. But what is the fact? How is this word of promise kept to the hope? If ever there were a case of reasonable doubt, I should say we had it when on the side of the patentee are ranged one chancellor, one vice chancellor, and seven judges (besides juries), and on the side of the alleged pirate, one chancellor, one ex-chancellor, and four judges, the majority of this minority being, as I have explained, qualified by the *encore*. There must be a reasonable doubt if it be right to deprive an inventor of his property, and sow it broadcast to all comers when nine learned men againgt six think it wrong. And yet a patentee is called upon, at the outset of his career, to know more law than even all these dignified lawyers, for he must be superior to them all if he could do what they cannot themselves do now, and reconcile their confliction. If we take from the minority the Lord Chancellor and the three judges of the Exchequer, who were merely maintaining their previous decision, *remanet* one judge, and one law lord, in this court of appeal against the majority of nine. Even were it certain, and I have not heard that it is, that these two are better than the nine, either of equal dignity or of the stuff of which such dignities are made, there surely is reasonable doubt, if it be interpreting a doubt in favour of the patentee, to award a penal forfeiture of his whole property, after benefiting the kingdom, because he could not, sixteen years ago, foresee what seven judges cannot even now see at all. That the decree is in the correct letter of the law we are not permitted to disbelieve, but when there is such difficulty and contrariety in reading that letter, I should like to have seen an enlightened reason why the benefit of such ambiguity must not in this case apply to the patentee in the regular course, with also an expression of feeling, such as often does honour to our legal dignitaries, of deep regret that the binding letter of the law should compel the painful duty of handing over the fruits of intelligence and worth as the reward of moral turpitude.

What appears to be required for our protection is that patent questions should be decided by the ordinary common sense of men engaged in the ordinary avocations of life, who use plain things for plain uses, without the time or disposition for refinements of studied sophistry. A verdict given by such men ought not to be placed at the mercy of humourists or verbalists of the most intense degree. The Exchequer claims the prestige of more legal learning than the other courts of plea, and has evinced it here, but this precisely is the kind of learning which is unsuited to such affairs. It dwells in *antiquation*, and indulged from the very commencement in skits and sallies at that practical scientific learning upon which the whole foundation of our *modern* prosperity is based. Of all obstructions pedantry most hinders the ordinary business of life. Such minds are elevated above common things; as Bacon writes of the stars, they give but little light because they are so high. The prestige of learning must be maintained, and very often by merely departing from common-place views. The patent is defunct, but the infallibility of the court has been preserved; they may exclaim with the French rake—"It was necessary for our glory that it should die." But truly it is a state of things which requires amendment. No one doubts—not even the adverse judges—that this great invention is the property of the inventor, but even then he cannot be permitted to enjoy it, except "*selon les regles*;" "*selon les regles!* Ordinary men are content with ordinary evidence; they believe it is the water and the malt which make the wort without plunging in the vat to see; in fact the whole world proceeds upon the belief that the food taken through the mouth into the stomach nourishes the body, but there is no *legal evidence* of it, according to the subtle requirements of the more learned minority. The proper persons to decide these things are the ordinary men you encounter every day, more wise than nice, who burst out in an examination when they hear what question Lord Abinger put, and that a fellow-being has been subjected to the excruciation of sixteen years of profound law, to decide if it was a proper question, and that at last it is decided to be proper and rational. These are the efficient *practical* judges, men who believe that it is the plane iron which makes the shavings, although they cannot *see* or *feel* them in the very moment of being made, and surely it is a sad mistake to subject *their* unbiassed opinions to the correction of a narrow class who know nothing of the facts except by hearsay. An endless see-saw of litigation is thereby established; if one of the majority of judges had happened to have reached the woolsack this year, the final decision would have accorded with the first decision of twelve rational men. Anything would be better than these pendulum vibrations year after year—even an Act of Parliament that patent disputes shall be settled by drawing long and short straws. Let it be one way or the other; if common sense is sometimes to be thrown over, better that the eviction should be entire and complete, so as to avoid delusive litigation. A splendidly illuminated record of the proceedings of this case, epoch after epoch, on the pattern of Priestley's chart of chronology, would be a most suitable contribution to the Parisian Exhibition, illustrating the encouragement this great country gives to inventors in the useful arts. It might place us in no very enviable light before the civilised world, but it would be the truth, and an undoubtedly genuine specimen of native manufacture, and foreign criticism might suggest some friendly hints for its improvement.

I am, sir, your obedient servant,

DAVID MUSHET.

August 7th, 1855.

P.S.—I see, since writing the above, that the Solicitor-General, who was a counsel in the cause, has made strong remarks on the arrangements in the house of Peers as a Court of Appeal. I have no pretensions to be a legal reformer, but it certainly seems possible to ensure, in a Court of final resort, a more comprehensive investigation of points which never can be investigated again. Were a definite number of law lords, say six, in addition to the Lord Chancellor, made requisite to form a quorum, there would be less chance of a single judge in appeal merely restoring his previously reversed decision. Lord St. Leonards, the Lord Chancellor, and Lord Campbell, vindicated their individual conduct sitting in appeal from any of the censure implied by the Solicitor-General, but nothing in their remarks was directed against an improvement of the existing arrangements; on the contrary, they cited difficulties which had arisen when of only two peers in appeal their opinions had been divided. Their remarks only place in a stronger light the singular irregularity in Mr. Heath's case from the ordinary treatment in cases of doubt. Three instances were mentioned where the assistance of the judges had been required, and the majority agreeing with the court below, that judgment, *as a rule*, had not been disturbed. The numbers of the majority and minority of the judges in these cases were quoted, the majority in each case being *less* than the majority in Mr. Heath's favour, yet the alleged ordinary practice of the peers was in this particular instance departed from, and the decision of the majority *overruled;* whereas the majority being *greater*, *à fortiori* that decision ought to have been confirmed.

The justices in favour of the patent were Crompton, Crowder, Platt, Erle, Wightman, Williams, and Cresswell. Of these, Erle and Cresswell, having presided at trials, were well versed in the case. The four adverse were Barons Parke, Alderson, Maule, and the Chief Baron Pollock. Baron Parke had *also* presided at a trial, and with Alderson, the present Lord Chancellor, and the late Baron Gurney, reversed the verdict which the jury gave before him. The Chief Baron at that time took no part in the judgment, because he had been counsel in a similar case, where the use of the chemical constituents of a substance was held to be a colourable evasion of the use of the substance itself. Why this scruple did not continue in force I have no information, but had it remained, the minority of judges would have been reduced to *three* against *seven*.

A letter in the *Times*, signed "Memor," has given strong extracts from a work by Sir Edward Sudgen, asking for the same reforms which Lord St. Leonards does not now praise Sir Richard Bethell for seeking.

FINE ARTS EXHIBITION, PARIS.

Sir,—I forward you the accompanying numbers of the pictures of principal interest in the Exhibition here, conceiving, if published in the *Journal*, it might be useful. It contains, I believe, almost every picture that the English taste will desire to look at. Each wall is numbered, and No. 1 is always on the left hand of the visitor when entering, and the numbers of the pictures follow the course round the room. I have not had time to go through the English pictures, nor water colours, nor drawings, nor sculpture.

I am, &c.,
M. MITCHELL.

Paris, August 25th, 1855.

P.S.—I have added the letter *a* to the best pictures, *b* to the next, and *c* to the next.

Vestibule.

2.—2270, 527, 528, 2237, 2239*b*, 2256, 2347*c*, 2015*c*, 2021*c*, 1967, 1978, 1987, 1979, 1977, 2140.

4.—2144, 2146, 2101, 2200, 2344*c*, 2008*c*, 1014, 3164*c*, 1650*c*.

First Ante Room.

3.—172*c*, 167*c*, 2066*c*, 2114, 2046.

4.—21*c*, 2203, 2210, 2181, 2113, 2043*b*, 2093, 2068, 2070*c*, 721*c*, 722*c*, 2455, 720*c*, 1918.

First Great Room.

1.—1759*c*, 1758, 1724, 1776*c*, 1783*c*, 1746*c*, 1781*c*, 1787, 1741*b*, 1732*c*, 1782*c*, 1775*c*, 1720*c*, 1688, 1774, 1805*c*, 1686.

2.—1766*b*, 1740, 1814, 2340, 1744.

4.—1770*c*, 1767*b*, 1690, 1691, 1735.

Second Ante Room.

2.—2629*c*, 2810, 3606, 4084, 4082, 2689, 2728, 3378*c*, 4081, 4083*c*, 3562, 3135, 4017*c*, 3973, 3923*a*, 2684*c*, 1938*c*, 546, 1937, 1936.

4.—600, 598*b*, 550*c*, 603*c*, 559, 545*c*.

Second Great Room.

1.—2620*b*, 2422, 3715*a*, 2621*c*, 3474, 2976*c*, 2496*c*.

2.—3881*b*, 3449, 3878*c*, 2501, 2819*b*, 2769, 2767*c*, 2587, 3396, 3185, 3781, 3114*c*, 3784*c*, 3289, 3291.

3.—3924*c*, 4206*c*, 4209*c*, 4208*c*, 3686.

4.—5470, 5030, 2504*c*, 4080*c*, 3279*c*, 3512, 3051, 3266*a*, 3270, 3264*b*, 3268*b*, 3267*b*, 3265*c*, 2766*c*, 4097*c*, 4096, 3813*b*, 3811*b*, 4102*c*, 3413, 3812, 3114*c*, 4095, 4094*b*, 4099*c*.

Third Ante Room.

2.—2793, 2439, 3730*c*, 2600, 2991, 4018*c*, 3770, 2612, 2998, 2731, 4192.

4.—2555, 3071, 2525*c*, 3935, 3951, 3958, 3955.

Third Great Room.

1.—3548, 3542*b*, 3546*b*, 3561*c*, 3456, 3942*c*, 3941, 3944*c*, 2574, 2577*c*, 2575, 3549, 3565, 3623*c*, 2988*c*.

2.—2927, 2926*c*, 2911, 2929*c*, 2918, 2915, 2937, 2922, 2940*c*.

3.—2933, 2938, 2914, 3988*c*, 2640*c*, 2643, 2642*c*, 2641, 3783*c*, 3326, 2405.

4.—4004*c*, 3557*c*, 3550*b*, 3555, 3559*c*, 3547*b*, 3564.

Fourth Ante Room.

2.—2882, 2873*c*, 5036, 2867*c*, 2851*c*, 4041*c*, 3635*c*, 2861, 3933, 2893*c*, 2585*c*, 2446*c*, 2871, 2814.

4.—2890, 2878, 2860, 2891*c*, 5057*c*, 5059*c*, 3663, 5058, 5060, 3660, 3661, 3662, 5035*c*, 2868, 2892*c*, 2784*c*, 2785*c*, 2865, 2876*c*.

Belgian Side Room.

1.—414*b*, 427*a*, 415*c*, 394*c*, 454, 475, 429, 275, 416, 279, 428, 393*a*.

2.—287, 294.

3.—407*c*, 461, 266*b*, 314, 409*c*, 368, 362, 363, 397.

H. Vernet's Room.

1.—4151*a*.

2.—4149, 4156, 3484, 4154, 4158.

3.—4165*c*, 4159, 4152*b*.

4.—4162.

M. Ingre's Room.

1.—3347*a*, 3357:

3.—3344*c*, 3365, 3367.

Wurtemburg Side Room.

1.—186, 220, 243, 198*b*, 183*c*, 247, 3025, 195, 2047, 2106.

2.—2204.

3.—2206, 2205*c*, 2207*c*, 23*c*, 9, 2183, 2198, 25, 31, 22, 27*c*, 7, 49, 3984*b*, 2197, 28.

4.—2199, 2205.

Belgian Outside Room.

4.—1919*c*, 1912*c*, 1908.

1.—1911, 1914, 406, 326, 443*b*, 411*b*, 267*b*, 369, 418*b*, 272*c*, 273*b*, 308*c*, 360*c*, 396*c*, 290, 285, 413*b*, 1527*c*, 1597*c*, 1609*c*, 1587, 1610*b*, 1581, 1589, 1554*c*, 3717*c*, 3621, 3241*c*, 4188*c*, 4037*c*, 4190*b*, 3782*c*.

2.—2849*c*.

3.—3238, 3237, 3239, 3229, 3234, 3233*c*, 3177, 2487*c*, 2997, 3184*c*, 2410, 1585*c*, 1582, 1518, 1519, 1573*c*, 1601, 1546, 1598, 1528, 1523, 1602, 1561, 1576, 1580, 400, 448, 265*b*, 399*c*, 281, 341, 299, 434, 453, 464*c*, 422, 417*c*, 457, 423, 452.

End Room.

2.—2607, 3570*c*, 3569*c*, 3567, 3862, 3194, 2631*c*, 3537, 2770*a*, 3919, 3000, 3751*c*, 3392, 3691*c*, 3389*c*, 3388, 3387, 3052, 3665*c*, 3664*c*, 2426*c*, 3666, 3808, 3261, 2825, 3807, 3416*c*, 2823.

Right Outside Room.

2.—3487, 3721, 3706, 3630, 3755, 4051, 3477.
4.—3747c, 3742c, 3743, 2803, 3023.

Outside Room.

3104, 4016, 2993, 3310, 4217c, 2906c, 2824c, 2604, 2905, 3796, 2588, 3163, 3740, 2561c.

Left-hand Gallery.

3283c, 4989, 2518, 4171, 2497c, 3991, 2739.

DISINFECTANTS.

Sir,—In the excellent letter of Mr. W. Bridges Adams in your last *Journal*, he recommends to the attention of the Society of Arts the subject of disinfectants, with the view of ascertaining the best and cheapest material for that purpose.

I venture to remark that Mr. Adams is clearly in error in recommending that the disinfectant most applicable for all purposes should be in a liquid form, and I feel sure your correspondent will, on further consideration and inquiry, agree, that whether used in privies, cesspools, chamber utensils, or in destroying bad smells, arising from whatever cause, no form can be more useful, effective, and generally applicable, than a dry powder.

Of all disinfecting materials, animal and vegetable charcoal have long been appreciated as the most powerful, the only obstacle to their general use being the expense, which has rarely been less, even for peat charcoal, than three or four pounds per ton.

The application of charcoal powder as a disinfectant for sanitary purposes, has recently been brought before the public in lectures by Dr. Stenhouse, at the Royal Institution, London, and by Dr. Wilson, at the Royal Society of Arts, Edinburgh, and also by Dr. Richardson (the editor), in the *Journal of Public Health* for June last, and by the editor in the *Artizan* Journal for this month.

Although charcoal has so long been esteemed as a valuable deodoriser and disinfectant, an erroneous opinion has prevailed until very recently, that its surprising power in destroying bad smells and deleterious effluvia was caused by its acting as an antiseptic agent. This fallacy has been proved by Dr. Stenhouse, from whose valuable lecture I venture to quote the following extracts. He says:—

"When putrefying animal and vegetable substances are covered with charcoal powder, the effluvia and miasmata which, under ordinary circumstances, they would evolve directly into the atmosphere, are absorbed and oxidised within the pores of the charcoal, where they undergo a species of what is called low combustion, which as effectually destroys them as if they were at once passed through a furnace; it is, therefore, on *its absorbing and oxidising power that the great efficiency of charcoal as a deodorising and disinfecting agent depends.*

"Hence the extraordinary efficacy of charcoal in the absorption and oxidation of gases and vapours is most satisfactorily accounted for.

"I am aware that some persons who admit the deodorising properties of charcoal deny that it acts as a disinfectant. I would direct the attention of such individuals to some of the facts already detailed. Thus, for instance, we have seen that the bodies of pretty large animals, covered only with a couple of inches of charcoal, have been allowed during many months to putrefy both in Mr. Turnbull's laboratory and in my own.

"Now, had the bodies of these animals been left to decay under ordinary circumstances, not only would the stench emitted have been intolerable, but some of the persons by whom these laboratories were constantly frequented would certainly have been struck down by fever or other malignant disorders. During the last twelve months, charcoal powder has repeatedly been most successfully employed both at St. Mary's and at St. Bartholomew's Hospitals, to arrest the progress of gangrene and other putrid sores.

"In the instance of hospital gangrene, we have to deal not only with effluvia, but also with real miasmata; for, as is well known, the poisonous gases emitted by gangrenous sores not only *affect* the individual with whom the mischief has originated, but readily *infect* the perfectly healthy wounds of any persons who may happen to be in its vicinity. So that in this way gangrene has been known to spread not only through one ward, but through several wards of the same hospital.

"In fact there is every reason to believe that many sick persons die not from the direct effects of the disease under which they labour, but they are actually poisoned by the putrid exhalations evolved from their own diseased bodies and those of other parties in their vicinity.

"This is especially the case in over-crowded military hospitals, where dysentery, cholera, and similar diseases prevail. In such circumstances the importance of employing some means of absorbing and destroying miasmata is so self-evident, that I think it quite unnecessary to dilate upon the subject.

"From the statements that have already been made, the utility of charcoal powder, as a means of preventing noxious effluvia from churchyards, and from dead bodies in other situations, such as on board ship, is sufficiently evident.

"Covering a churchyard or burial vault to the depth of from two to three inches with coarsely-powdered charcoal, would effectually prevent any putrid exhalations ever finding their way into the atmosphere. Powdered charcoal should likewise be introduced into all coffins, as not only favours the decomposition of dead bodies, but prevents them from being injurious to the living.

"In conclusion, I would confidently hope that the time is now nearly come, when the propagation of disease by infection shall become the exception, and not the rule; and when the most nervous and delicate persons will be enabled to attend unharmed on their friends, labouring under even the most malignant infectious disorders."

Numerous experiments have shown that charcoal powder for all sanitary purposes is more harmless, useful, and effective in thoroughly destroying effluvia than any other material, either in a state of liquid or powder.

In a letter which appeared in your *Journal* of the 17th November, 1854, I explained a mode of using charcoal for disinfecting house privies, by means of moveable boxes similar to the mode now suggested by Mr. Adams, and which had then been partially adopted in this district.

The use of charcoal powder for domestic purposes is gradually coming into use, especially for children's nurseries, and the rooms of sick people, hospitals, &c. It has been found equally efficacious as a purifier of stables and shippons, and I venture to predict that the time is not far distant when it will be generally used to fill up the coffins of deceased persons, to prevent the effluvia emitted from the corpse before interment, and secure the speedy and harmless decomposition of the body in the grave.

I have forwarded a sample of disinfecting charcoal, prepared by Mr. Chadwick, of this city, and hope you will lay it before the Society on the opening of the next session. It has been extensively used in the neighbourhood for upwards of five years, its price (30s. per ton, or 2s. per cwt.,) having brought it within the reach of all classes.

Hoping that the Council of the Society will accede to Mr. Adams's suggestion, to consider the important subject of providing a cheap and efficient disinfectant for general use,

I am, sir, your obedient servant,
JOHN THOMPSON.
Secretary to the Nitro-Organic Manure Company.
3, Watling-street, Shudehill, Manchester, August 14th, 1855.

THE VINEGAR PLANT.

Sir,—If F.S.A. will look to pages 61, 74, 94, 166, 328, Vol. 2nd of the *Cottage Gardener* (1849), he will find full particulars of the vinegar plant. R. H.

27th August, 1855.

STATISTICAL CONGRESS AT PARIS.

Sir,—Whilst increased means of communication, and extended intercourse and trading, connect closely all nations, it becomes most important that facilities be also afforded for comparing each other's institutions, and, moreover, for widening the field of observation on physical, moral, and social phenomena, in order the better to arrive at, and to appreciate, the laws which govern them.

To such an end the Statistical Commission of Belgium assembled a Congress of Statists in 1853, in Brussels, in order to agree upon a common form for the statistical returns and documents of all countries, which Congress was attended by official deputies from most states of Europe. The questions then discussed were:—

1. The Organisation of Statistical Offices.
2. The Census of Population.
3. The Survey.
4. Statistics of Emigration.
5. Agricultural Statistics.
6. Industrial Statistics.
7. Commercial Statistics.
8. Economical Budgets for Working Classes.
9. Pauperism.
10. Instruction and Education.
11. Crime.

The results of the Brussels Congress having been most encouraging to statistical inquiries, it suggested the assembling of similar congresses periodically, at different places, to take up other subjects of inquiry, and to extend further the work of assimilation. The French Government have, in consequence, determined on inviting the second of such international statistical congreses to meet in Paris this year, and invitations have just been issued for the 10th of September next.

The subjects detailed in the programme are:—

- Statistics of Means of Communication, including—
  - Land routes—Roads.
    - Bridges.
    - Railways.
  - Internal Navigation, Natural and Artificial.
    - Canals.
  - Maritime Ports of Commerce.
    - Lighthouses.
    - Telegraphic Lines.
- Agricultural Statistics.
- Prison Statistics.
- Judicial Statistics—Nomenclature of Crimes.
- Statistics of Provident Institutions
  - ,, Savings Banks.
  - ,, Friendly Societies.
  - ,, Tontines.
  - ,, Insurance Companies.
- Statistics of Accidents—
  - in the Workshop,
  - in Mines,
  - on Railways.
- Statistics of Mental Alienation, or Lunacy;
  - ,, Epidemics;
  - ,, Great cities, including
    - Topographic Situation;
    - Surface;
    - Houses;
    - Public Health;
    - Public Security;
    - Consumption;
    - Industry and Commerce;
    - Means of Communication and Transport.
    - Municipal Organization;
    - Municipal Finances;
    - Public Institutions;
    - Provident Institutions;
    - Criminal and Civil Statistics;
    - Public Instruction;
    - Religion;
    - Public Amusements.

The Congress does not intend to deal with the lessons which statistics afford. It simply aims at organising a common system, whereby we may be able to obtain solid principles from the collection of facts experienced in many countries, and accurately and uniformly recorded.

I am, Sir, yours &c.,
LEONE LEVI.

12, the College, Doctors' Commons,
London, August 29th, 1855.

CHEMICAL PURIFICATION OF TOWNS.

Sir,—In carrying any new plan into effect, it is sometimes useful to begin with the easiest and simplest methods, so as to set the type. In my communication on the Chemical Purification of Towns and Cities, I omitted to mention a very large subject for operations, the railways. Bookstalls have there been largely appropriated, and there is a glimmering perception that a railway station is a good site for a general bazaar, but it is very remarkable that the great facilities for the manufacture of guano have been wholly overlooked. An enterprising chairman on one of our metropolitan lines once conceived the idea of running excursion and parliamentary trains at express speed, as not really costing more, and as diminishing the risk of collision; but it was found to be impracticable owing to a peculiar habit of a large portion of the travellers. They considered it—like the old stage coachmen—a duty to drink large quantities of beer whenever they could, and it was impossible to prevent them from wasting time at the stations, as a result of this large imbibition of liquids. Now if any enterprising Smith or Heal, or other well-known station-name, would consider this matter rightly, it would be a very practicable thing to immortalise and enrich himself, and put additional revenue into the general pocket of railway companies, thereby improving the shareholders' dividends. The plan would be simply to introduce the use of moveable cesspools at the railway stations, provided with chemical neutralisers, which would be a far more efficient process than the water method, and would realise as a property that which is at present a waste. No locality would be more favourable for the commencement of the plan, which would probably be found an aid to the lessening of station expenses,—certainly in saving the cost of outlay and repairs in water apparatus and drains.

I am, Sir, your's faithfully,
W. BRIDGES ADAMS.

August 15th, 1855.

PATENT LAW AMENDMENT ACT, 1852.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[*From Gazette August 24th*, 1855.]

Dated 16*th May*, 1855.

1110. J. Knowles and E. T. Bellhouse, Manchester—Working of marble, stone, glass, &c.

Dated 18*th July*, 1855.

1608. W. C. Thurgar, Norwich—Preservation of the fluid substance of fresh eggs.

Dated 19*th July*, 1855.

1638. S. Stocker, Brighton—Water-closets.

Dated 26*th July*, 1855.

1697. J. Hunt, New Kent-road—Self-fastening band.
1699. W. Brown, Bradford—Combing machinery.
1701. C. Thompson, South Shields—Prevention of smoke.
1703. C. Goodyear, Avenue-road, St. John's-wood—Gunpowder. (A communication.)
1705. W. Mardon, Christchurch-chambers, Newgate-street—Treating garancine. (A communication.)

Dated 27*th July*, 1855.

1707. C. Hodges, Manchester—Knitting machinery for hosiery. (A communication.)
1709. P. Effertz, Aix-la-Chapelle—Cutting, creasing, or marking paper, &c.
1711. C. F. Kirkman, Argyle-street, Regent-street—Spinning machinery.
1713. A. Smith, Manchline, N.B.—Cigar and other cases.

Dated 28*th July*, 1855.

1717. H. H. Barry, Bedford street, Strand—Combing and carding machinery.

1719. J. Hyde, Sheffield—Furniture castors.

1721. W. Brownfoot, Leeds—Apparatus for raising or lowering blinds, maps, &c.

1723. E. Willis, King-street, St. James's—Wine bottles.

1725. C. Goodyear, Avenue road, St. John's-wood—Covers for floors.

Dated 30*th July*, 1855.

1727. J. M. Fillier, Paris—Looms.

1729. W. F. Coles, 61, Paul-street, Finsbury—Boots and shoes.

1731. T. Clunes, Aberdeen—Pumps and fire engines.

1733. J.H. Whitehead, Mowville, Otley, York—Steam-boiler furnaces.

Dated 1*st August*, 1855.

1741. S. Mellor, Salford, and T. Young, Manchester—Supplying water to steam boilers.

1743. J. Clarke, Leicester—Machinery for making loop fabrics.

1745. G. Bufnoir, Lyons—Stopping bottles.

Dated 2*nd August*, 1855.

1747. A. Allan, Perth—Valve gear.

1749. J. Saunders, Newgate-street—Roller for cloth, &c.

1751. R. Bodmer, 2, Thavies-inn, Holborn—Rotatory steam engines. (A communication.)

Dated 3*rd August*, 1855.

1757. A. E. L. Bellford, 32, Essex-street, Strand—Grinding mills. (A communication.)

1759. G. H. Fullard, Thorney, Cambridge—Pin for thatch coverings.

1761. J. C. A. Pfaff, Wiesbaden—Motive power.

1763. H. J. Betjemann, 449, New Oxford street—Extending tables. (A communication.)

1765. J. H. Johnson, 47, Lincoln's-inn-fields—Metallic waterproof fabrics. (A communication.)

1767. R. Richardson and W. Greenshields, Douglas, Isle of Man—Chenille fabrics.

Dated 6*th August*, 1855.

1774. J. Macintosh, Great Ormond-street—Incendiary materials to be used in warfare.

Dated 7*th August*, 1855.

1784. C. Bedells, Leicester—Elastic fabrics.

1786. J. A. Manning, Inner Temple—Treatment of sewerage.

1788. G. Nasmyth, Kennington—Preserving animal and vegetable matters.

1790. W. M. Tileston, 16, Cannon-street—Machinery for ruling paper. (A communication.)

Dated 8*th August*, 1855.

1792. B. W. Pycock, Southholme, Gainsborough—Curtain fixtures. (A communication.)

1794. N. Smith, Thrapstone—Horse rake.

1796. R. B. Cooley, Nottingham—Hats.

Dated 9*th August*, 1855.

1800. V. Delperdange, Bruxelles—Joining tubes and pipes.

1802. P. and M. Latour, Paris—Looms.

1804. P. A. Le Comte de Fontaine Moreau, 4, South-street, Finsbury—Feeding steam boilers. (A communication.)

1806. T. Sleight, Hull—Compound for bowel complaints.

1808. J. Robertson, Cask Works, Commercial-road—Casks.

Dated 10*th August*, 1855.

1810. W. Mickle, Willington, Durham—Smelting iron.

1812. G. Durham, 3, Drummond-crescent, Euston-square, and C. Wyatt, 1, Conduit-street, Regent-street—Machinery grease.

1814. E. Finch, Chepstow—Machinery for discharging coals from waggons.

1816. A. Morin, St. Etienne—Artificial fuel.

1818. P. and M. Latour, Paris—Machine for cutting nails and driving into shoe.

1820. G. R. Innes, Valparaiso—Raising and lowering rolling blinds. (A communication.)

Dated 11*th August*, 1855.

1822. P. L. P. Baragnon, Paris—Preserving and reckoning coin.

1824. P. Pretsch, Islington—Photography.

1826. C. E. Reeves, M.D., Edward-street, Portman-square—Repeating fire-arms

1828. L. Turletti, Paris—Portable alarm apparatus.

1830. E. Topham, Nottingham—Cleansing steam boilers.

Dated 13*th August*, 1855.

1832. W. G. Gregory, Leeds—Camp furniture.

1834. W. Horsfield, Langley Mill, Derby—Railway axle boxes.

1836. R. Blackburn, Wandsworth, and W. L. Duncan, Putney-vale—Bleeching.

1838. A. and F. Thornton, Nottingham—Plushed or piled fabrics for hats, &c.

Dated 14*th August*, 1855.

1840. J. Venables, Burslem—Ornamenting articles made of clay.

1842. G. Shears, East-place, Kennington-road—Stereoscopes.

1844. L. Marion, Paris—Consuming smoke.

Dated 15*th August*, 1855.

1846. J. Coghlan, M.D., Wexford—Pivoting artificial teeth.

1848. S. Statham, Cloudesley-street, and W. Smith, Hoxton—Electric telegraph cables.

1850. A. V. Newton, 66, Chancery-lane—Railroad chairs. (A communication.)

1852. J. H. Johnson, 47, Lincoln's-inn fields—Reins. (A communication.)

WEEKLY LIST OF PATENTS SEALED.

Sealed August 24*th*, 1855.

411. John Haines White, Manchester—Improvement in the method of applying artificial teeth.

416. Auguste Edouard Loradoux Bellford, 32, Essex-street, Strand—Improvements in the application of breaks on railways. (A communication.)

418. Auguste Edouard Loradoux Bellford, 32, Essex-street, Strand—Improvements in the manufacture of soda.

425. James Brodie, Bow of Fife, N.B.—Improvements in and applicable to tongs, pliers, vices, and other holding instruments.

429. Benjamin Fothergill and William Weild, Manchester—Improvements in machinery for combing cotton, wool, flax, silk, and other fibrous materials.

432. Thomas Helliwell, Greenhirst Hay, near Todmorden, and Joseph Barker, of Houghstone Mill, near Todmorden—Preserving pickers and pickersticks, and for preventing cops being knocked off the spindle in the shuttle during the process of weaving in the power loom.

433. Alexander Symons, Strand—An egg-cooking apparatus.

440. John Gedge, 4, Wellington-street South, Strand—Improvements in apparatus or machinery for stopping or retarding vehicles used on railways. (A communication.)

441. George Mackay Miller and John Wakefield, Inchicore, Dublin—Improvements in pistons for engines driven by steam or other elastic fluid, which improvements are also applicable to the pistons or plungers of reciprocating pumps.

454. George Mackay Miller, Inchicore, Dublin—Improvements in axles and axle-boxes of engines and carriages in use on railways.

488. Arsène Louis Garnier, Guernsey—An improved process for producing photographic pictures, which he intends to denominate "Système Garnier de photocherographie coloriée."

493. Auguste Edouard Loradoux Bellford, 32, Essex-street, Strand—Improvements in the oscillating steam engine. (A communication.)

545. Auguste Edouard Loradoux Bellford, 32, Essex-street, Strand—Improvements in machinery for making butt-hinges of wrought iron or other metal complete at one operation.

606. George Lowry, Manchester—Improvements in lubricators.

670. Alexander William Williamson, University College, Gower-street—Improvements in stoves or fire-places.

692. Joseph Peabody, Old Broad-street—Improved machinery for obtaining motive power by the action of the wind.

800. Eugène Pasquier, Reims (France)—Improved machine to be used for drying wool and other fibrous materials.

816. James Templeton, Glasgow—Improvements in the manufacture of pile fabrics.

1132. Samuel Stocker, Brighton—Improvements in machinery and apparatus for shaping of metals, and also in such metal goods made from sheets, plates, or tubes, and also for other parts, connected therewith, and for finishing the same when left by the machine or apparatus.

Sealed August 28*th*, 1855.

443. Fischer Alexander Wilson, Kennington—Improvements in closing and unclosing bottles and other vessels used for containing liquids, also in the modes of inserting, securing, and liberating liquids therein and therefrom.

449. Bewicke Blackburn, Clapham Common—Improvements in the manufacture of pipes.

460. George Lowry, Manchester—Improvements in machinery for preparing and spinning flax, hemp, and other fibrous materials.

461. Constant Jouffroy Duméry, 51, Rue du Chateau d'Eau, Paris—Improvements in alarm and safety whistles for steam generators.

466. William George Henry Taunton, Liverpool—Improvements in pumps, pump gear, and pump buckets.

478. Robert Boby, and Thomas Cooper Bridgman, Bury St. Edmunds—Improvements in corn dressing and winnowing machines.

487. Richard Archibald Brooman, 166, Fleet-street—Improvements in projectiles.

512. Louis Emile Bataille, Paris—Improvements in looms for weaving pile-fabrics.

517. Alfred Krupp, Essen, Prussia—Improvements in the construction of railway wheels.

553. William Prockter Stanley, Peterborough—Improvement in or addition to clod crushers.

554. William Score, Bristol—Improvement in bleaching oils, fats, and resin.

560. Samuel Swingler, Aston-juxta-Birmingham—Improvements in the manufacture of certain kinds of metallic spoons, forks, and ladles.

567. Benjamin Goodfellow, Hyde, Chester—Improvements in regulating the power for driving the pumps of hydraulic presses.

572. Edward Vincent Gardiner, 24, Norfolk-street, Middlesex Hospital—Improvements in furnaces, ash pits, flues, and fire-places, whereby smoke is prevented, fuel more perfectly consumed, and its heating value greatly economised.

592. Mark Smith, Heywood, Lancaster—Improvements in looms for weaving.

600. John Henry Johnson, 47, Lincoln's-inn-fields—Improvements in the application of carbonic acid gas as a motive power. (A communication.)

673. John Shaw, Lees, Lewis Harrop, Oldham, and James Fielding, Lees—Improvements in machinery for spinning and doubling cotton and other fibrous materials.

667. Anguish Honour Augustus Durrant, Tong Castle, Salop—Improved axle and axle box for carriage wheels, shafts, axles, or general bearings of machinery.